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### **Abstract of the Disclosure**

A flywheel energy storage system includes a housing adapted to be evacuated and maintained at a low pressure atmosphere, a cylindrical steel flywheel supported for low-loss rotation in the low pressure atmosphere within the housing on a bearing system, a nonevaporable getter for maintaining the low pressure atmosphere in the housing, and a motor/generator for accelerating and decelerating the flywheel for storing and retrieving energy. The motor/generator includes a rotor that is coupled to and rotates with the flywheel, and a stationary stator that cooperates with the rotor for converting between electrical and mechanical energy in the flywheel system and contains electromagnetic coils. The stator has a thin barrier coating for minimizing degradation of the low pressure atmosphere by minimizing outgassing from the stator into the housing.

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